

As explained above, the inventive communication system and the communication terminal and portable electronic device used in it provide the following sort of effects.

(1) By carrying around a portable electronic device with an organism recognition device according to the present invention, the user becomes able to use any communication terminal having a network communication function anywhere to communicate safely with a required resource on the Internet while performing a VPN connection or security check. Therefore it is possible to communicate using the best useable communication means while maintaining one's own security policy at the necessary location without being limited to the security set by the circuit provider.

(2) It is not necessary to keep information that threatens security in the communication terminal; VPN connection and personal firewall settings, virus check settings, and other communication setting information that pertains to security is encrypted and kept in the portable electronic device, so the risk of setting information leaking to an outside third party is greatly reduced.

(3) The load on communication terminals occasioned by security checks is reduced, and one can expect improvement in the performance of other processing.

(4) In connection with (2) above, in ordinary use it is essentially unnecessary for the user himself to become involved in operating VPN client software, etc. Also, it becomes possible to make accessing the setting information a restricted task using encryption means that only a network administrator can use, thereby greatly reducing the risk of someone carelessly altering the client software's setting information. As a result, one can expect the result of reducing a network administrator's work and a company's administrative costs.

(5) An individual can carry the inventive portable electronic device as an ID, and can save VPN software that works with that ID, a personal firewall, virus check software, and connection-related communication setting information. By doing so, the company that loaned the device does not have to do tasks such as installing VPN client software in a newly used communication device or making settings for VPN connection when an employee/user is moved to a different post or when replacing communication devices such as the PC that is being used. All that is needed is to ensure a communication interface with the relevant token, so the network administrator's work is greatly reduced.

(6) In connection with the aforesaid ID, by linking the inventive scheme with software such as security software, etc. it becomes possible to authenticate a person using an organism recognition device, check license information by issuing the ID to a network server after authentication, provide an update function for software installed in the token after the license check, etc. This can be reliably done vis-à-vis the person carrying the device, not vis-à-vis the terminal.

(7) If the specifications of a communication terminal are such that it cannot provide the application or communication software functions that are being used, instead of buying a new communication terminal it is possible to switch only the required communication processing ability to another distributed processing device and to carry around this sort of distributed processing device; therefore one can always have a stable communication environment without carrying around the terminal itself.

## CLAIMS

1. A communication system comprising:  
A communication terminal comprising a network connection means, and  
A portable electronic device capable of communicating with the communication terminal;

Said communication terminal comprises a virtual network switch that can forcibly alter the destination of data transmitted to and from a network connected via said network connection means;

Said portable electronic device comprises a security ensuring means for ensuring communication security to and from said network using said communication terminal; and

Said communication terminal transmits data to and from said network via said virtual network switch and said portable electronic device's said security ensuring means.

2. A communication system according to claim 1, wherein said security ensuring means includes at least one of a VPN means, virus removal means, and firewall means.

3. A communication system according to claim 1 or claim 2, wherein said virtual network switch is a virtual IP switch incorporated into the network layer in the OSI 7-layer model in TCP/IP, the standard Internet protocol, and

The virtual IP switch transfers packets received from said network to a higher transport layer or to said portable electronic device according to preset parameters, and returns packets from the portable electronic device to a higher transport layer or to said network that was the transmission source according to preset parameters.

4. A communication system according to claim 1, claim 2, or claim 3, wherein checking the security of said communication terminal's storage medium and applications is performed by said portable electronic device's said security ensuring means via said virtual network switch.

5. A communication according to any of claims 1 through 4, wherein said portable electronic device comprises an organism recognition device such as a fingerprint sensor, etc., an organism information storage unit in which organism information is prestored and held, and an authentication means for permitting access to said network via said communication terminal by comparing organism information read by said organism recognition device against organism information stored in said organism information storage unit.

6. Said communication terminal comprising said virtual network switch as described in any of claims 1 through 5.

7. Said portable electronic device as described in any of claims 1 through 5.

8. A communication system comprising:

A communication terminal comprising a network connection means, and

A portable electronic device capable of communicating with the communication terminal;

Said communication terminal comprises a security ensuring means for ensuring communication security to and from a network; and

Said portable electronic device comprises a communication setting information storage unit that stores and holds communication setting information needed for communication with said network via said security ensuring means, an organism recognition device such as a fingerprint sensor, etc., an organism information storage unit in which organism information is prestored and held, and an authentication means for comparing organism information read by said organism recognition device against organism information stored in said organism information storage unit.

9. A communication system according to claim 8, wherein said security ensuring means includes at least one of a VPN means, virus removal means, and firewall means.

10. Said portable electronic device as described in claim 8 or claim 9.